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TOWARDS A DEFINITION OF FINANCIAL CONTROL SYSTEMS

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Precis

Financial control systems have been equated traditionally with accounting or budgetary control systems or, more generally, with responsibility accounting. In other words, the control variables in a financial control system have been identified with accounting variables, such as net income. This probably reflects the empirical facts since in practice most financial measures are indeed accounting-based measures.

Conceptually, however, one requires a broader definition. Financial measures are dollar-denominated measures and not necessarily accounting-based measures. Economic value is not measured by the accountant, but at the conceptual level is an excellent, potential control variable. Opportunity costs are not found in an accounting system, but serve as ideal control measures.

This article seeks to define financial control systems independently of the accounting system. In so doing, it attempts to lay a foundation for empirical research into financial control systems. The basic research question is what determines the design of such a system. Is it a translation of the goals and objectives of the enterprise into dollar-denominated variables? Or, is the financial control system a function of the accounting system - and, more particularly, of the financial accounting system?

To address these questions, especially the latter, it is necessary to distinguish a financial control system, the dependent variable, from the goal structure, the environment, the management control system, and the accounting system, which are all independent variables. The definition presented here is designed to achieve that conceptual distinction.

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Financial control definition: The term financial control is fairly widely used both in the literature and in popular speech, yet no comprehensive definition of the term appears to exist anywhere. Definitions are of course merely ways of saying what one means by a word or words. As such they are never true in any absolute sense. But, inasmuch as definitions enable one to order one's thinking, so definitions can be more useful or less useful. Towards this latter end then we define a financial control system as

- a) a set of related dollar denominated variables used by management to control an organization, the people in the organization, and the resources used by the organization
- b) the people involved in establishing, maintaining, monitoring and evaluating these variables, and
- c) the process, rules and procedures that govern the establishment, maintenance and monitoring of these variables.

It is immediately clear that the system, as defined here, consists of three related and interrelated parts - a set of related variables, a group of people, and a process. For much of the time we shall ignore the people and the process and pretend that the system is merely a set of variables. However, it is obvious that such a set is completely lifeless unless people are involved and that such a set cannot exist independently of a process which leads to its creation and revision.

Central to the definition is the adjective "related." A random collection or conglomerate of financial variables can hardly be construed as a financial control system. Webster's first definition of a system is a set or arrangement of things so related or connected as to form a unity or organic whole. By definition then the variables which compose a financial control system, must be related or connected.

An example of such a system might be found in a product division composed of a production department and a marketing department. The former might be treated as an expense center, while the latter might be treated as a revenue center. Together they form a profit center. The financial control system for the division consists of the variables total costs, total revenues and profit or net income linked by the accounting equation. Net Income equals Revenues less Expenses or Costs. The existence of a relationship makes it possible to speak in a meaningful way of a system.

Webster also suggests that a system is a method or plan of classification or arrangement. Financial control is a system in that sense too. As we argue in more depth elsewhere, a financial control system constitutes a model of the organization. Models are of various kinds. Ackoff and Sasieni (1968) distinguish three types: iconic, analogue and symbolic. Iconic models are typically scale models. Analogue models include graphs and contour maps. Symbolic models take the form of mathematical relationships.

In the sense that a financial control system is a set of related variables it is clearly a symbolic model of the firm. It is a representation of the organization that enables us to predict, explain and interpret the behavior of the organization. It is not a complete model of the firm, however. That would include variables which are controlled as well as variables which are not controlled. By definition the financial control system models only those variables that are under the control of management.

A third definition of a system is an established way of doing something, hence our word systematic. Here again financial control is a system in this sense. It is not merely a set of related variables, but also a process, an ordered set of rules and procedures by which control is

exercised. There exists also, if system is to make sense, an established procedure for creating variables for control purposes, altering them and ultimately perhaps discarding them. This too is part of the system.

Control: We turn at this point to a definition of control. This has been variously defined by numerous authors. Originally it meant to check or verify. And it is in this sense that we find it being used since the very earliest days of the English language.

It later came to bear the additional meaning of regulation: to govern according to a rule, principle or system. It was this sense that found common usage in scientific parlance where controllers or regulating devices were essentially homeostatic devices returning a system such as a boiler to a pre-determined state such as a given temperature or pressure. Eilon (1971) uses the word in this context:

Servo-mechanism theory tells us that control is associated with an adjustment, namely with a corrective action designed to guide the system to function to a predetermined standard.

Eilon, and many others with him, argue that this concept of control can be applied directly to organizations or administrative systems. Here the manager is perceived to be the controller - the "device" that guides the administrative system to function to predetermined standards.

This approach is all very well as far as it goes. It does, however, imply a very static view of control where standards are first set, discrepancies are measured, and the system returned to standard. What seems to be missing is the dynamic interplay of standards and events that characterizes an administrative control system. Horngren (1972) attempts to reflect this in his definition:

Control is the implementation of a decision model and the use of feedbacks so that objectives are optimally obtained. This definition of control is comprehensive and flexible. It is concerned with the successful implementation of a course of action as predetermined by a

decision model; but it is also concerned with feedback that might (a) change the future plans given the model, and (b) possibly change the decision model itself or change the prediction method that provides input to the decision model.

Along with allowing for the possibility of the controlling standards themselves being changed by feedback, Horngren introduces the new notion that control is essentially the implementation of a decision. As he would have it, the decision process either does or should consist of a planning phase, involving the collection of historical data and the prediction of future expected costs and benefits, followed by a control phase, involving implementation, results and feedback.

But control is surely distinct from decisions. Most importantly a decision can be taken in isolation. Control, at least in the sense we are using it here, always involves more than one person. Decisions too can be single period affairs involving no feedback whatsoever. For example, the gambler, who stakes his all, has no chance, in the event of a loss, to subsequently control events. In other words, while multiperson ongoing decisions involve control, there are many decisions where the use of control would have misleading connotations.

Moreover, this view still separates planning and control into two separate categories. There is virtue in this in that at least conceptually, planning implies ex ante standard setting while control implies ex post monitoring and evaluating. However, Anthony (1965) is surely right when he suggests that this conceptual distinction is illusory. Management planning and management control are so intertwined that Anthony has argued that the one term management control should cover both activities.

Whenever we are dealing with sentient beings, immediately one imposes a monitoring and evaluating system this will be taken into consideration in the planning of the individuals affected. We are not dealing with a

mechanistic system where planning can take place independently of the machine to be monitored, the behavior of the machine itself, and the ultimate form of the monitoring system. On the contrary when we deal with human beings there is an essentially closed feedback loop that makes planning a function of monitoring. As a result it is almost certainly fruitless to distinguish planning from monitoring. The two form one unitary whole. As Anthony says:

Furthermore, most authors describe the control process as involving, among other things, decision making, whereas decision making is also clearly the essence of the planning process. Conceptually, it is possible to break the control process into its purely control elements and its planning elements, but such a breakdown is not useful, since in practice the elements occur together. For example, consider the activities that are generally understood to be included in the process called budgetary control. This process involves a recurring cycle of activities. The cycle starts with the preparation and approval of a budget, which clearly is a planning activity. But the budget also is used as a basis for control; indeed many contend that the budgetary preparation activity is a principal means of achieving control. During the budget year, many activities occur that clearly fit the definition of control, but, simultaneously and as part of the same process, there may occur an activity called budget revision, which is planning. In short, planning and control activities are so closely intertwined in the budgeting process that to describe each of them separately is not only difficult but also pointless-pointless because those concerned with the process usually are involved with and interested in both its planning aspect and its control aspect.

We shall follow him and speak of management control or more simply control to include both planning and monitoring or evaluation. Thus control, as we use it, is distinctly broader than either the notion of adjustment to predetermined standards or the implementation of decisions.

The temptation at this point is to make control virtually synonymous with management. Anthony (*ibid*) appears to be following into this trap when he suggests that:

Management control is the process by which managers assume that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives.

One could drop the term control here with no loss of meaning whatsoever.

Tannenbaum (1964), working from an organization theorist's perspective, also tends to define control very broadly. He argues that:

Control is any process in which a person (or group of persons or organization of persons) determines or intentionally affects what another person or group or organization will do.

The key here, as Itami (1977) rightly notes, is the notion of influence. What Tannenbaum seems to imply is that anywhere we find one person influencing another, we have control. This, like Anthony's, is a definition that is probably too broad to be useful. Every time one individual interacts with another there is influence at work. How much of this is intentional is impossible to determine depending as it does on the intent of the individuals concerned.

What is needed is a broader definition than servomechanism theory offers us, but more narrow and workable than these last two. Lorange and Scott Morton (1974) offer a potential solution which relies on a teleological definition. They state:

We propose that the fundamental purpose for management control systems is to help management accomplish an organization's objectives by providing a formalized framework for (1) the identification of pertinent control variables, (2) the development of good short-term plans, (3) the recording of the degree of actual fulfillment of short-term plans along the set of control variables, and (4) the diagnosis of deviations.

Any system then which enables these four objectives to be met constitutes a management control system. They themselves perceive this as a set of processes:

The management control process is split into the control variable identification process, the short-term direction setting process, and the short-term plan accomplishment tracking process.

Together these constitute a management control system for them.

It should be noted at the outset that their definition flows from that of the earlier one by Anthony. He distinguishes strategic planning

from management control and operational control. This has its virtues, but also its faults. Strategic planning involves the objectives of the organization according to Anthony while operational control deals with specific tasks. However, the effective objectives of the organization are probably more closely reflected in the ongoing management control system while the control of specific tasks is virtually meaningless outside of a management control system. As a result it is not clear that this hierarchy of control has any empirical significance at all.

Then too it is probably misleading to equate management control with short-term plans as Lorange and Scott Morton do. There is scarcely a decision, no matter how short-term in its orientation, which does not have long-term implications. There is too much truth in the saying that the longrun is made up of a series of shortruns. As a result it is extraordinarily difficult to separate so-called longrun from shorrun decisions outside of an economics text.

Alternatively stated, the Lorange and Scott Morton framework envisages a nice, orderly, linear progression from strategic planning and longterm goals, through short-term plans, to a management control system. It is one of the strengths of the subsequent Lorange and Vancil (1977) planning model that it thoroughly disabused us of that notion. Control is a dynamic process involving a continuous interaction between plans and feedback, the shorrun and the longrun, and between the ex ante and the ex post.

That said though, their framework and teleological definition is easily modified to provide a statement of the purpose of control as we see it: The fundamental purpose of a control system is to provide (a) an information system, (b) a decision support system and (c) a model of the organization, so as to help management achieve a set of objectives by

(1) the identification of key variables to monitor the organization's performance (2) the development of plans to meet those objectives (3) the recording of the degree of actual fulfillment of those plans, and (4) the diagnosis of deviations from those plans. The people involved, the rules and procedures by which they work to achieve the above purpose, and the process itself constitute a control system.

There are a number of key points in this definition which we have expanded on elsewhere.

It will be noted for instance that while we distinguish control from decision making, we do see it as a decision support system. One reason for this is that the control system is a model of the organization. This model, tracing as it does the means-ends chains in the organization, is an essential underpinning of the decision process.

It will also be noted that along with Lorange and Scott Morton, the identification of key variables has been placed before the development of plans. This attempt to break into the control cycle at a point other than planning serves to emphasize the dynamic nature of the planning and monitoring process.

We may now revert to the nature of a financial control system. With the definition of a control system behind us we may in fact develop a second definition. This is in a sense simpler than the first, since we may confine ourselves to the brief statement.

A financial control system is a translation of the control system's rules, procedures, and plans into dollar denominated variables (together of course with the people involved and a process for its creation and maintenance.)

More formally, a financial control system is a mapping of the control system into dollar denominated variables.

A classic example of such a translation is the goal of efficiency. As it stands this simply states that one should maximize the input-output ratio. A control system would consist of people and procedures or processes to support this maximization goal. Control, however, cannot proceed far unless one is able to quantify efficiency. In a one product firm this is easy - one wants to maximize the bushels reaped compared with the bushels sown. Such an approach is not possible in a multi-product firm where tradeoffs between various inputs and outputs must be made.

Consider for example the classic example of labor and capital inputs. A production frontier consists of all those combinations where if we added any more of one input while holding the other constant, we should not improve our output at all. Unfortunately, the frontier consists of an infinity of points none of which is superior to another. The only way to eliminate this multiplicity of solutions is to introduce the cost of labor and the cost of capital. The problem then resolves to one of finding the least cost solution or the maximum profit solution. Given the usual regularity conditions this yields a single, unique solution.

There is an extremely important point concealed here. We so often think of costs in terms of accounting and the exchange of goods and money that we tend to overlook their role as decision weights. To put it another way we forget that one of the crucial roles of costs is to make comparable what otherwise could not be compared.

Consider again a production process - or several of them. If one has a technological ratio of one man to two machines while another has a ratio of two men to one machine, then an output of ten widgets could be produced by 10 men and 20 machines or 20 men and 10 machines. Which is preferable? The answer can only be given when the costs of each are known. If labor costs are \$8 per hour while machine rentals are \$6 per hour, clearly the

first alternative should be chosen.

The importance of this example is that a control system consists of numerous such alternatives. The only way to proceed is to translate, as we did in the previous paragraph, these alternatives into dollar terms and then to impose a decision rule such as least cost or maximum profit. A more formal way of saying the same thing is that the control system itself is defined in multidimensional space. In this multidimensional setting incomparabilities will always be occurring. The financial control system is a mapping of this control space onto the real line. By the rule that more is better no incomparabilities can then exist.

Restating this for emphasis, the financial control system is not simply a "nice" addition to a control system or something that an insensitive accountant imposes on an organization. It is a crucial and critical mapping of the multi-dimensional control process into the straight line which enables an organization to proceed without continuously bumping up against the problem of lack of comparability.

Control objectives: Now that we have two definitions of a financial control system in hand we need to relate it to, and distinguish it from, some of the other systems that exist within an organization. The first of those that we treat is the set of objectives that guide the firm.

Recall our first definition of financial control as a set of dollar denominated variables. Clearly, what we would like to see is a set of variables that reflect the objectives of the organization. The classic example of a dysfunctional split is the case of a sales department, which is monitored and evaluated on the basis of turnover alone, while the goal of the organization is to maximize profit.

Profit itself is a difficult concept simply from a longterm, short-term perspective. Many, if not most, company objectives, are phrased in

terms of the longrun. Almost all financial control variables, accounting net income being the prime example, measure the shortrun. One suspects that this leads to a great deal of dysfunctional behavior in the organization.

In other words, one would like to see the objectives of the organization centrally situated in the financial control system. And, indeed no second definition posits such a case. To be correct it should read, ideally a financial control system is a translation of a control system. In practice, one fears that the translation tends to go the other way.

It is well known that the quantitative tends to drive out the non-quantitative. In most organization shortterm pressures are sufficient to drive out longrun intentions. The high level of uncertainty inherent in the longrun also helps to put emphasis on the near term. As a result short-term financial results tend to dominate many, many organizations. High sounding longrun objectives get replaced by effective objectives created by the financial control system.

Financial Accounting: This unfortunate tendency is aided and abetted by the strength of the financial accounting model. It is important to realize that the accounting system does constitute a model of the firm. Moreover, it is one of the very few, perhaps even the only, comprehensive model of the firm. It is in fact scarcely possible to talk about an organization, especially a private enterprise, without talking in terms of revenues, and costs, and profits - all variables in the accounting model.

Models are representations of reality. They are not reality themselves. However, where reality is extremely complex, as it is in large organizations, it is not only easier, but imperative to deal with a model. Reality is too much for the human mind to bear. Instead we substitute a model. The problem comes when we begin to mistake the model for reality.

This is a particular danger with the accounting model simply because it is an extremely powerful and comprehensive model. Ideally a financial control system is a model of reality. Too often, one suspects it is a sub-model of the accounting model. Instead of modelling reality, management is modelling a model.

Little things suggest that this modelling of a model is indeed rife in organizations. One firm equates its financial control system with its accounting system. Another firm speaks of profit and accounting net income as though they were interchangeable. Any number of investment analyst persist in describing accumulated depreciation as a cash reserve available for new plant. The belief is almost universal that an increase in net income is a sign of success. The examples are endless. They all point to one thing namely that economic reality and the accounting model have become hopelessly confused. The net result is that the financial control system is not a mapping of the control system into financial terms, but a selection of a few so-called key control from an accounting system.

This is not necessarily bad. The accounting system might indeed be an excellent predictor of the firm's behavior so that a financial control system drawn from it may be very effective. On the other hand this approach may be equated with trying to steer a battleship by installing a complex steering system on a scale model of the battleship. It might work, but this is more likely to be happenstance than anything else. What we want is to steer the battleship - in general the model simply gets in the way of doing that - though not of course with simulating how one might proceed.

In other words, the truly effective financial control system goes back to reality and seeks to build a model to control that directly. No doubt it will make use of accounting variables, but also as the need for

those flows from the control system itself, i.e., from economic reality.

The other way of building a financial control system, i.e., from the accounting model, leads in general to ineffectiveness because we are modelling a model.

Management Accounting: Financial accounting is not management accounting and the question arises whether the strictures above apply equally to that accounting system designed for internal purposes. The answer is yes, but for slightly different reasons.

Management accounting was designed to serve two fairly distinctive purposes. These are to provide information for managerial decision making and for management control respectively. Management accounting therefore is an information system that encompasses a financial control system.

This is however slightly misleading because it suggests that the part of the managerial accounting system that is concerned with information for control is indeed the financial control system. Lorange and Scott Morton further this view by equating financial controls and budgets. As they say:

In its practical form control in organizations today is synonymous with financial control and, in particular, with budgets and the budgeting process.

And indeed this is possibly true from an empirical standpoint.

However, it is not true from a theoretical viewpoint. We have already pointed out that the accounting system does double duty: decision support and control support. The two support systems might use only one set of variables, but the process which makes them available, the processes involved in their use, and the people involved, all vary widely. As a result the decision support role and the control support role are quite distinct and should be as distinct.

But financial control systems are logically distinct from management

accounting systems for other reasons. For one, the financial control system contains only those variables that are being monitored. The crucial fact to study in fact in financial control systems is just which variables has management chosen to place in this system for control purposes. A vast array of variables is offered by the management accounting system. The empirical analyst of financial control must ask just which of these did management choose and why. Thus the two are further distinguished in that the one only involves control variables while the other includes a much larger set.

A further distinction between the two depends on how broadly or how narrowly we choose to define management accounting. Probably the most useful definition confines management accounting to a debit/credit process which assumes additivity and records the effects of transactions data by and large. This includes pro-forma statements such as budgets. It would exclude opportunity cost data, probably present value based data, and systems where the separate net income numbers do not add up to corporate net income. These non-additive, opportunity cost, present value data can however play a very important role in a financial control system and further set it off from the management accounting system.

What does emerge however from this discussion is the power, the extraordinary power, of the accounting model. It is extremely difficult to talk about dollar denominated variables without talking about the accounting system. There is essentially no other measure of profit than accounting net income. Whenever one talks of costs one is talking of accounting costs - unless we are willing to make a very real attempt to break out of the thought mold the accounting model has cast us in. It is a powerful model and a good one. We have to work to see *the possibilities outside of it.

But possibilities do exist outside of it. Fixed overhead costs of a plant are very real transactions and therefore accounting costs. On the other hand, if the plant is working below capacity, the opportunity cost of this overhead is zero. This latter cost is not an accounting costs. Similarly, we do not record the opportunity cost of equity capital in accounting since it does not involve an arm's length transaction. There may be no accounting charge, but a very real opportunity cost.

One can conceive of a financial control system involving only opportunity costs and as a result lying wholly outside the gambit of the accounting system. And indeed, whenever economists talk about costs and theories of the firm, it is a system of opportunity costs that they have in mind. Be that as it may, the point is that a set of dollar denominated variables can exist, at least in theory, independently of the accounting system.

As a practical matter though it is probably true that for most organizations the financial control variables are drawn from an accounting system. A working definition of a financial control system might be a set of related accounting variables used in the control of the firm.

The problem, though, with this definition is that it obscures several very important features in the design and evaluation of financial control systems. For one, the linkage between a financial control system is of the utmost importance both from a design and a research point of view. An organization where the planning is done by the chief accountant tends to be very different from one where the two functions are separated. A definition that equates accounting with financial control blurs this distinction.

For another, management accounting tends to be a first cousin of

financial accounting. Rarely does one find a management accounting system that is entirely independent of the financial accounting system. Again this is largely due to the strength of the accounting model. Where the financial control system is closely associated with the accounting system there is an inexorable tendency for the accounting logic to rule. The extent of this rule is a matter of much concern to designer and researcher alike. As a matter of logic though, the question can only be addressed after one has distinguished, at a conceptual level, the accounting system from the financial control system.

Thirdly, the whole thrust of the accounting system is towards the calculation of this period's costs and revenues. This is inherently a short term concern. Lorange and Scott Morton, on the other hand, argue the need for longerterm considerations in control systems. Empirical investigation of organizations reveals that this is indeed taking place. However, to achieve this longer term thrust it has proved necessary to differentiate the planning and monitoring function from the accounting function. Stated otherwise, the distinction between control and accounting is a vital one for both the designer and the researcher.

Implications: We are in a position now to reflect on some of the implications of the definition of financial control systems that has been offered. As pointed out earlier definitions are not correct in some absolute sense, only in a more pragmatic sense. Definitions serve their purpose if they provoke research, promote understanding, enable data to be classified and insights to be gained, and ultimately premit predictions to be made.

The first and most obvious characteristic of our definition of financial control is that it is a relatively limited one. Management control, as a whole, encompasses a wide variety of control techniques from screening people for jobs, through budgets and bonus schemes, to firing people.

Financial control, by definition, is concerned only with a small segment of this whole.

We were also at pains to distinguish the accounting system from the financial control system. The reasons for this were twofold. One wants to explore the effect of accounting on financial control and ultimately on control in the large. Logically then one must separate a dependent variable from an independent variable. Secondly, one wants to explore the possibility of using dollar-denominated variables which are not generated by the accounting system. Where this occurs financial control is indeed distinct from accounting.

There are several implications to this limited definition which is distinct from accounting. Firstly, from a research design point of view it enables one to ask which precise variables are being watched for financial control purposes. This is closely akin to the question raised by Rockart and others as to which are the key variables that are being used by an organization. Akin, but not identical, since we are concerned only with the dollar-denominated key variables.

Once these key, financial control variables are identified, it becomes possible to research the question as to their relationship to other systems within the organization. We have already suggested that ideally the financial control system should reflect the goals and objectives of the organization. Do they, is a very important question to ask. One suspects on the other hand that the accounting system's logic and design is a very powerful force on the financial control system. To what extent is it, is another important empirical question. Are the firm's goals and objectives reflected in a personal incentive scheme such as bonuses and stock options? How is this related, if at all, to the financial control system?

This leads into a second major area, that of organizational design. One suspects that historically the accounting system was the driving force behind the financial control system. In recent years more and more organizations have come to feel that this was inadequate. For one, the accounting system tends to engender a shortterm emphasis or perspective. For another, the accounting system tends to stress historical costs. Many firms have found it necessary to develop a financial control system that was somewhat independent of the accounting system. To achieve this they have established departments in the firm separate from the accounting department. This differentiation of roles was deemed necessary because top management wanted financial control personnel to adopt and develop a perspective different from that of the accountant. This differentiation in practice seems directly parallel to our differentiation at the conceptual level.

This then raises the last and ultimate issue. How should a financial control system be designed? Our definition and associated conceptual framework is designed to get a handle on that question. We intend to explore this in more depth in a subsequent paper. Essentially though it involves the identification of key dollar-denominated variables in the light of the firm's goals and objectives, technology and environment, and managerial style. We believe that the definition of a financial control system offered here is a useful first step to defining that design process.

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